

**WHAT IS CLAIMED IS:**

1        1. A method for driving a plasma display panel, which includes a plurality of first and second  
2        electrodes arranged in pairs, a plurality of data electrodes formed normal to the first and second  
3        electrodes, and a plurality of sub-fields for one TV field to display a multi-gradation, the method  
4        comprising:

5                applying a reset pulse voltage to the first electrodes;

6                applying a first voltage alternately to the first electrodes and the second electrodes to cause  
7        a sustain discharge; and

8                after applying a second voltage to the first electrodes or removing part of the first voltage  
9        applied to the first electrodes, applying third and fourth voltages to the second electrodes and the data  
10        electrodes, respectively, before applying the first voltage, to erase wall charges in cells defined by  
11        the first electrodes, the data electrodes, and the second electrodes, accommodating an address  
12        erasure.

1        2. The method of claim 1, wherein the plural first and second electrodes are divided into  $j$   
2        groups each including  $i$  pairs of the first and second electrodes,  
3        the plasma display panel further includes  $j$  first common lines and  $i$  second common lines,  
4        where  $j$  and  $i$  are positive integers, wherein the  $j$  first common lines are coupled independently to the  
5         $j$  groups, the first electrodes of the one group are coupled in common to the first common line, and  
6        the  $i$  second electrodes of the same group are coupled independently to the  $i$  second common lines.

1           3. The method of claim 2, wherein the applying of third and fourth voltages to erase wall  
2           charges comprises of:

3           applying the third and fourth voltages to the second electrodes and the data electrodes,  
4           respectively, in a simultaneous manner.

1           4. The method of claim 2, wherein the third voltage is applied sequentially to the second  
2           common lines between successive sustain discharge voltage pulses applied to the second common  
3           lines.

1           5. The method of claim 2, wherein the reset pulse voltage is applied sequentially to the first  
2           common lines, the second voltage being applied sequentially to the first common lines.

1           6. The method of claim 2, wherein a bias pulse voltage is applied to the second common lines  
2           while the fourth voltage is applied.

1           7. The method of claim 1, wherein the first voltage is a sustain discharge voltage, the second  
2           voltage is a ground voltage, the third voltage is a scan pulse voltage including a negative (-) value,  
3           and the fourth voltage is a data pulse voltage having a positive (+) value.

1           8. The method of claim 1, wherein the applying of the reset pulse voltage is performed only

2 once for one TV field, and

3 the applying of third and fourth voltages to erase wall charges in cells is performed at most

4 once for one TV field.

1 9. An apparatus for driving a plasma display panel, which includes a plurality of first and  
2 second electrodes arranged in pairs, a plurality of data electrodes formed normal to the first and  
3 second electrodes, and a plurality of sub-fields for one TV field to display a multi-gradation, the  
4 apparatus comprising:

5 a first driver for applying a voltage for sustain discharge to the first electrodes by periods, and  
6 applying a first voltage to the first electrodes of cells selected for erasure of the sustain discharge or  
7 removing the voltage for sustain discharge to erase the sustain discharge;

8 a second driver for applying the voltage for sustain discharge to the second electrodes, and  
9 applying a second voltage to the second electrodes of cells selected for erasure of the sustain  
10 discharge; and

11 a third driver for applying a third voltage to the data electrodes of cells selected for erasure  
12 of the sustain discharge.

1 10. The apparatus of claim 9, wherein the plural first and second electrodes arranged in pairs  
2 are divided into  $j$  groups each including  $i$  pairs of the first and second electrodes,

3 the plasma display panel further includes  $j$  first common lines and  $i$  second common lines,  
4 wherein the  $j$  first common lines are coupled independently to the  $j$  groups, the first electrodes of the

5 one group are coupled in common to the first common line, and the  $i$  second electrodes of the same  
6 group are coupled independently to the  $i$  second common lines.

1 11. The apparatus of claim 9, wherein the second and third voltages are applied to the second  
2 electrodes and the data electrodes, respectively, in a simultaneous manner.

1 12. The apparatus of claim 10, wherein the second driver applies the second voltage  
2 sequentially to the second common lines between successive sustain discharge voltage pulses applied  
3 to the second common lines.

1 13. The apparatus of claim 10, wherein the first driver applies a reset pulse voltage  
2 sequentially to the first common lines and the first voltage sequentially to the first common lines.

1 14. The apparatus of claim 10, wherein a bias pulse voltage is applied to the second common  
2 lines while the third voltage is applied.

1 15. The apparatus of claim 9, wherein the first voltage is a ground voltage, the second voltage  
2 is a scan pulse voltage having a negative (-) value, and the third voltage is a data pulse voltage  
3 having a positive (+) value.

1 16. The apparatus of claim 9, wherein a reset pulse voltage is applied to the second electrodes

2 only once for one TV field, and  
3 the sustain discharge does not occur again until the end of an n-th TV field in a cell with the  
4 sustain discharge erased in the n-th TV sub-field.

1 17. A plasma display panel comprising:  
2 first and second substrates;  
3 a plurality of first and second electrodes arranged in pairs;  
4 a plurality of data electrodes arranged alternately with the first electrodes and the second  
5 electrodes;  
6 a first driver for applying a first voltage to the first electrodes by periods to cause a sustain  
7 discharge, and applying a second voltage to the first electrodes of cells selected for erasure of the  
8 sustain discharge or removing the first voltage to erase the sustain discharge;  
9 a second driver for applying a third voltage to the second electrodes of cells selected for  
10 erasure of the sustain discharge before applying the first voltage, after applying the second voltage  
11 to the first electrodes or removing the first voltage from the first electrodes; and  
12 a third driver for applying a fourth voltage to the data electrodes of cells selected for erasure  
13 of the sustain discharge before applying the first voltage, after applying the second voltage to the first  
14 electrodes or removing the first voltage from the first electrodes.

1 18. A computer-readable medium having computer-executable instructions for performing  
2 a method for driving a plasma display panel, which includes a plurality of first and second electrodes

3       arranged in pairs, a plurality of data electrodes formed normal to the first and second electrodes, and  
4       a plurality of sub-fields for one TV field to display a multi-gradation, the method, comprising:

5               applying a reset pulse voltage to the first electrodes;

6               applying a first voltage alternately to the first electrodes and the second electrodes to cause  
7       a sustain discharge; and

8               applying third and fourth voltages to the second electrodes and the data electrodes,  
9       respectively, before applying the first voltage, to erase wall charges in cells defined by the first  
10      electrodes, the data electrodes, and the second electrodes.

1       19.      A computer-readable medium having stored thereon a data structure comprising:

2               a first field containing data representing applying a reset pulse voltage to the first electrodes;

3               a second field containing data representing applying a first voltage alternately to the first  
4       electrodes and the second electrodes to cause a sustain discharge; and

5               a third field containing data representing applying third and fourth voltages to the second  
6       electrodes and the data electrodes, respectively, before applying the first voltage, to erase wall  
7       charges in cells defined by the first electrodes, the data electrodes, and the second electrodes.

1       20.      The computer-readable medium of claim 19, wherein the plural first and second  
2       electrodes are divided into  $j$  groups each including  $i$  pairs of the first and second electrodes,  
3       the plasma display panel further includes  $j$  first common lines and  $i$  second common lines,

4 where  $j$  and  $i$  are positive integers, wherein the  $j$  first common lines are coupled independently to the  
5  $j$  groups, the first electrodes of the one group are coupled in common to the first common line, and  
6 the  $i$  second electrodes of the same group are coupled independently to the  $i$  second common lines.